

REMARKS

Applicant would like to thank the Examiner for the careful consideration given the present application. The application has been carefully reviewed in light of the Office action, and amended as necessary to more clearly and particularly describe the subject matter which applicant regards as the invention.

Applicant has included an International Search Report for a PCT application related to the present application and an Information Disclosure Statement including the references cited within the International Search Report.

Claims 1-20 have been cancelled. Claims 21-34 are new and consideration of claims 21-34 is respectfully requested. Claims 21-34 have been drafted to distinguish over the art cited within the International Search Report and the final Office action of August 22, 2005.

New claim 21 includes the feature:

a second contact contacting the PN junction in the absorber region, the second contact forming a permanent electrical contact between a P doped side and an N doped side of the PN junction in the absorber region, so that the PN junction in the absorber region is unbiased.

This feature of the claim is shown in Figs. 1 and 2 and described in paragraphs [0014], [0019] and [0022] of the specification. Specifically, the specification states the device "comprises two metal electrodes through which the charge carriers may be injected in the n-doped and in the p-doped side of the PN junction (paragraph [0019]) and "the top electrode in the absorber region is contacted by a wire bond 14 and thus is connected to the bottom electrode, so that the PN junction is kept at zero bias." A wire bond is a permanent electrical contact.

New claim 22 includes the feature of:

the second contact includes a wire contact between a layer having the electrical potential of the P side and a layer having the electrical potential of the N side.

This feature of the claim is shown in the specification in Fig. 1 and described in paragraph [0019] of the specification. Specifically, paragraph [0019] refers to a layered structure forming the PN-junction.

The TO-can of claim 30 is described in paragraph [0009] of the specification. The features of claims 31-33 are shown in Fig. 6 and described within paragraph [0036] of the specification.

The Examiner has rejected claims 1-3, 5-15, 17 and 19-20 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,252,839 to Fouquet (hereinafter Fouquet). Although these claims have been cancelled, the new claims include similar subject matter. Thus, Fouquet will be discussed here in regard to new claim 21, the only independent claim of the application.

A permanent electrical contact between a P-doped side and an N-doped side of the PN junction in the absorber region so that the PN junction in the absorber region is unbiased is not taught or suggested by Fouquet. Rather, Fouquet teaches the absorber region to be reverse biased.

The Examiner states, in his response to Applicant's previous arguments, that the Fouquet diode may be operated under a no-bias condition and refers to Fig. 1a of Fouquet. Applicant respectfully notes that Fig. 1a of Fouquet illustrates an absorption curve for an unbiased absorber, however Fouquet does not state that this curve represents the device of Fouquet operated in an unbiased manner. The curve could represent any type of unbiased absorber known in the art. Further, there is no teaching within Fouquet of a system including a permanent electrical contact

between a P-doped side and an N-doped side of the PN junction in the absorber region, to provide an unbiased condition.

The Examiner states that when a structure recited in the reference is substantially identical to that of the claims, claimed properties or function are presumed to be obvious. Applicant respectfully states that this premise is not valid when the reference specifically teaches away from the properties and/or function of the claimed invention. Fouquet repeatedly states that the absorber of the light-emitting diode is reverse biased. The second contact described in Fouquet serves this function directly. Fouquet states "the second contact is an absorber contact 58 for reverse biasing the absorber region to shift the absorption spectrum therein to a lower energy." [Column 6, Lines 34-35] Simply, a permanent electrical contact between the P side and the N side of a PN junction would impede the application of a bias to the PN junction in the absorber region.

Additionally, Fouquet does not teach or suggest "a housing carrying the superluminescent light-emitting diode, the housing comprising a symmetry axis, wherein said optical beam path is parallel to said symmetry axis" as required by claim 21. Simply, Fouquet does not describe a housing for carrying a diode. In the art, housings that create an optical beam path that is parallel to a symmetry axis are only known for use in systems wherein optical feedback is desired, such as lasers. Such a structure would not be obvious to use in the system of the present invention, where optical feedback is not desired.

Additionally, such a structure would not be obvious to use with the diode taught by Fouquet. Fouquet teaches a diode with an absorber that is reverse biased. In comparison to a common laser diode, the diode of Fouquet requires

more electrical feed throughs in order to provide the reverse bias. A standard laser diode housing does not provide the required space for these additional feed throughs. For this reason, it would not be obvious to provide the diode of Fouquet with a housing comprising a symmetry axis, wherein said optical beam path is parallel to said symmetry axis.

Applicant requests that the Examiner consider new claims 21-34. Applicant believes, for at least the reasons stated above, that these claims are patentable over Fouquet, as well as the other references submitted by Applicant or cited by the Examiner. The Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 18-0160, our Order No. FRG-15267.

Respectfully submitted,

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